1. Project Name: Kawaihae Small Boat Harbor

2. Date of Inspection: June 29, 2007

3. Inspection Personnel:

	Name	Agency/Office	Telephone No.
a.	Dan Meyers	COE	438-8875

4. Discussion:

West Breakwater:

STATION	REACH	COMMENTS
0+00 to 0+89	#1	Root
0+90 to 5+43	#2A	Trunk
5+44 to 8+59	#2B	Trunk
8+60 to 8+82	#2C	Trunk
8+83 to 11+89	#2D	Trunk
11+90 to 12+60	3	Head

East Breakwater:

STATION	REACH	COMMENTS
0+00 to 0+10	#1	Root
0+11 to 2+65	#2A	Trunk
2+66 to 2+80	#2B	Trunk
2+81 to 7+10	#2C	Trunk
7+11 to 7+30	#2D	Trunk
7+31 to 7+80	3	Head

* Several 2003 Photos reused due to low light conditions, higher tides and poor picture quality of 2004 Photos. Photos reused only if conditions were unchanged.

West Breakwater 1,260LF:

a. Breakwater warning sign missing.

b. Sta. 0+00, Overview photo for reference.

c. Sta. 2+50, OS, Dislodged armor stones on sideslope.

d. Sta. 2+80, OS & HS - Crest, Settling of armor stones approx. 4’ deep. Monitor this area.

e. Sta. 3+00, OS, Displaced armor stone & exposed underlayer at waterline.

ARMOR STONE
DISPLACEMENT

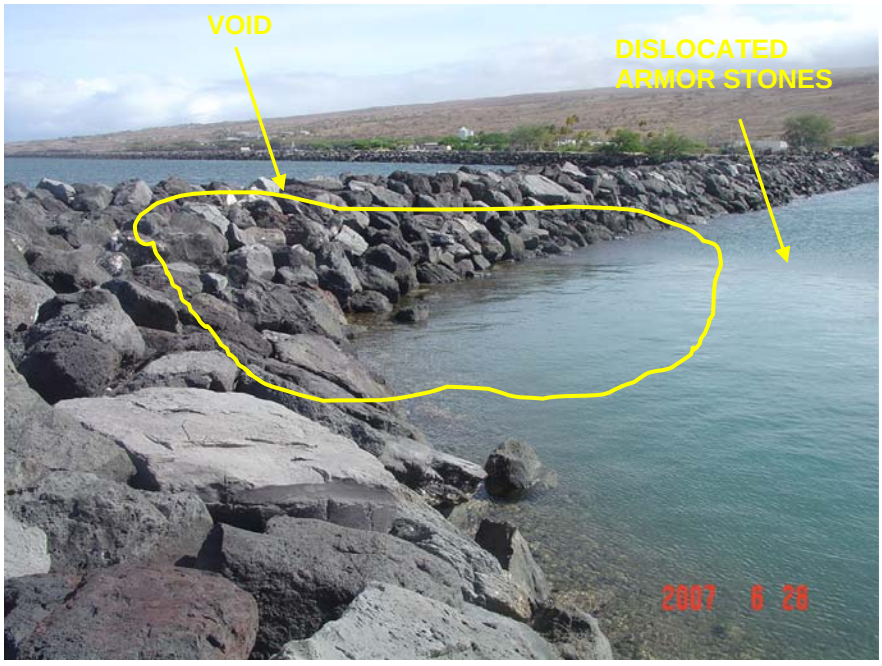
f. Sta. 3+45, OS, Settling at crest, armor stone displacement at toe.

g. Sta. 5+00, Crest, cracked armor stone.

h. Sta. 5+30, OS, Photo for reference, sideslope very steep, dislodged armor stones.

NOTE: Construction QA Report: Sta. 5+43, 6+50, 8+60 to 8+83, underwater inspection report states "…vertical placement, slide potential".

i. Sta. 5+35, OS, Possible sideslope sliding, dislocated armor stones, and void approximately 15 linear feet.



j. Sta. 5+45, HS, Minor sideslope settling, 2 ea. Dislodged armor stones.

k. Sta. 5+40, Overview photo for reference.

l. Sta. 5+50 - Sta. 5+75, OS, Possible sideslope failure, toe stones missing, void, approx. 20LF.

m. Sta. 5+75, Cracked armor stone at centerline of crest.

n. Sta. 6+00, OS, Dislodged armor stone @ toe, cavity/void.

o. Sta. 6+50, OS, Cavity, five foot dia., sideslope steeping.

p. Sta. 7+10, OS, Bridging of armor stone, large cavity.

v. Sta. 9+00, HS, Flattening of the sideslope.

w. Sta. 9+00, OS, Settling of sideslope.

x. Sta. 9+00, HS, Overview of mid-section settling.

y. Sta. 9+45, HS, Several dislocated armor stones.

z. Sta. 9+75, OS, Overview photo for reference.

aa. Sta. 10+00, OS, Bridging, armor stone @ toe w/o contact. (2003 Photo)

bb. Sta. 11+00, Crest, Cracked armor stone.

cc. Sta. 11+00, HS, Chinker 2/3 up the sideslope, no bottom contact.

dd. Sta. 11+20, HS, 3ea. chinkers, one 12T-15T armor stone bridging.

ee. Sta. 11+50, OS, 2ea. armor stones at waterline dislodged.

ff. Sta. 12+15, OS, Armor stone larger than specified in the contract specs, 15T-18T.

ll. Sta. 12+20, OS, 1ea. armor stone bridging.

gg. Sta. 12+10, OS Hinge, Split armor stone (FY 2002 Photo).

hh. Sta. 12+10, HS Head, slight sideslope settling .

ii. Sta. 12+60, The head is settling on the Oceanside of the structure causing the NavAid to lean.

jj. Same as above.

kk. Sta 12+60, Head of West BW. Some settling of armor stones at the head since previous inspection.

East Breakwater 780LF:

a. Sta. 0+50 to 2+00, harbor and ocean side. Numerous voids in the armor layer, which expose the underlayer. Underlayer and armor stones are undersized. Most undersized stones appear to be located within the splash zone of both the HS and OS.

b. Sta. 2+65 to 2+80 missing armor stones in bend, HS. Coral material has washed up and is filling the voids.

c. Sta. 2+80 to 4+00, OS, Monitor minor settling on sideslope.

d. Sta. 4+36 - Sta. 4+60, OS, minor sideslope settling 30’x40’.

Note: Sta. 3+30 to 7+10, HS. Armor stones lacks adequate contact with underlayer section. Armor stones are perched (by the use of very small stones) above the underlayer section.

e. Sta. 4+36, HS, Minor the sideslope has begun to creep.

f. Sta. 4+36, HS, hinge separation.

g. Sta. 4+50, HS, Chinkers have begun to break due to weight of armor stone.

h. Sta. 4+50, HS, Chinkers have begun to break due to weight of armor stone, sideslope beginning to separate @ the hinge and creep @ the toe.

i. Sta. 7+50, HS, 1 armor stone appears to be dislodged but has contact.

j. Sta. 7+80, Head, HS, structure settling causing the NavAid to lean.

k. Sta. 7+80, NavAid Same as above.

l. Sta. 7+80, NavAid Same as above.

k. Sta. 7+80, Overview of interior

Sta 12+60, Head of East BW. Some settling of armor stones at the head since previous inspection.

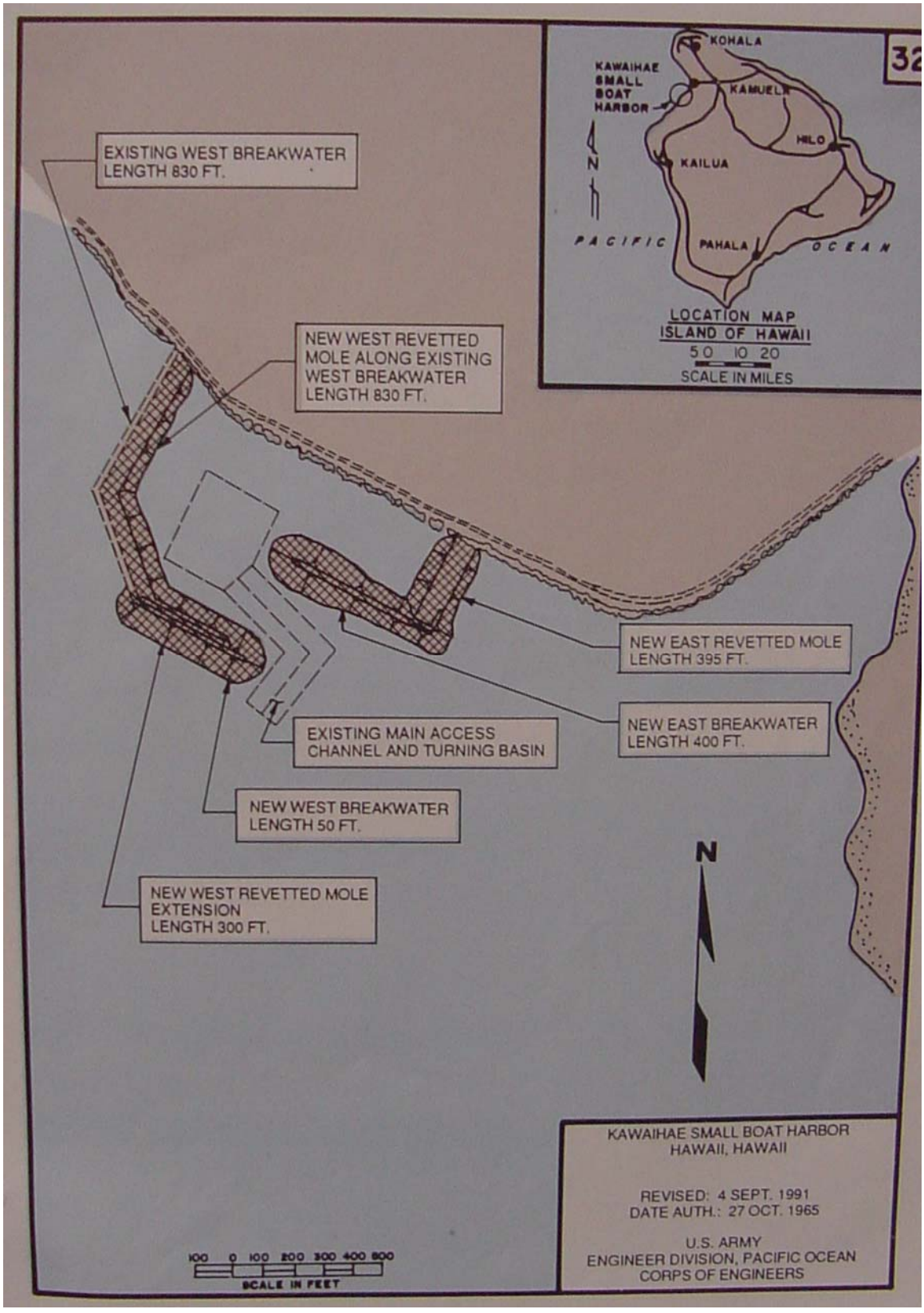
5. Findings/Conclusions:

West B/W - Good, Only minor deterioration is evident, but function is not significantly affected. Areas of most concern are oceanside and crest settling. East B/W - Fair, Deterioration is clearly evident, but the structure still appears sound. Project should be inspected after all high wave actions to determine if repairs are required. USCG to be notified of NavAid condition.

Signed: _____
Dan Meyers, CEPOH-EC-T

Signed: _____
Jim Pennaz P.E., Ch, CEPOH-EC-T

Project Index Map


EXISTING WEST BREAKWATER
LENGTH 830 FT.
NEW WEST REVETTED MOLE ALONG EXISTING WEST BREAKWATER LENGTH 830 FT.
NEW EAST REVETTED MOLE LENGTH 395 FT.
NEW EAST BREAKWATER LENGTH 400 FT.
EXISTING MAIN ACCESS CHANNEL AND TURNING BASIN
NEW WEST BREAKWATER LENGTH 50 FT.
NEW WEST REVETTED MOLE EXTENSION LENGTH 300 FT.
KOHALA
KAWAIHAE SMALL BOAT HARBOR
KAMUELA
HILO
KAILUA
PAHALA
PACIFIC
OCEAN
N
LOCATION MAP
ISLAND OF HAWAII
50 10 20
SCALE IN MILES
100 0 100 200 300 400 800
SCALE IN FEET
KAWAIHAE SMALL BOAT HARBOR
HAWAII, HAWAII
REVISED: 4 SEPT. 1991
DATE AUTH.: 27 OCT. 1965
U.S. ARMY
ENGINEER DIVISION, PACIFIC OCEAN
CORPS OF ENGINEERS

KAWAIHAE SMALL BOAT HARBOR, HAWAII, HAWAII

CONDITION OF IMPROVEMENT 30 SEPTEMBER 1993

PREVIOUS PROJECTS: None.

EXISTING PROJECT: Authorized by the River and Harbor Act of 27 October 1965. Provides for a wave absorber 1,075 feet long at the inner end of the basin; an access channel 900 feet long, 80 to 100 feet wide and 8 to 10 feet deep for a small boat harbor; and a mole 190 feet long. The proposed small boat harbor plan of improvement provides mooring for 90 commercial craft and consists of an 850 foot long, 120 foot wide and 12 foot deep entrance channel; a 1.2 acre 12 foot deep existing turning basin; a 640 foot long, 80 foot wide and 8 foot deep access channel; a 400 foot long wave absorber and a 2.5 acre 650 foot long revetted offshore island.

PROGRESS OF WORK

Completed and Under Maintenance: A new small boat harbor site was selected for a high explosive R&D study, code name Project TUGBOAT, by Nuclear Cratering Group. An entrance channel 850 feet long, 120 feet wide and 12 feet deep; a turning basin 200 feet by 200 feet, 12 feet deep; and a breakwater 850 feet long were constructed under Project TUGBOAT in June 1971.

Work Remaining: General Design Memorandum (No. 1 for deep draft and light draft harbors) was approved by OCE on 17 June 1968. Subsequently, the State of Hawaii has requested that the small boat harbor be relocated outside the deep draft basin southeast of the existing spoil area. A post authorization change was approved on 9 February 1972. A revised design memorandum for the relocated light draft harbor was completed in August 1971 and approved on 9 February 1972. An ocean current study was completed in January 1974. Preconstruction engineering and design initiated in October 1988 is 90 percent complete. Construction contract is scheduled for award in FY 1994.

COST OF CONSTRUCTION:

	New Work
United States Funds	
Corps of Engineers	$7,600,000
Coast Guard	10,000
Contributed Funds	
Required	845,000
Other	10,000
Total Estimated Costs (1993)	$8,465,000

RANGE OF TIDES: The range of tide between mean lower low water and mean higher high water is 2.0 feet. The extreme range is 4.5 feet.